

## CLAIMS

We claim:

1. A method for performing technology mapping, the method comprising:

a) receiving a design that is not bounded to a particular technology;

b) repeatedly:

selecting from the design a candidate sub-network,

identifying at least one replacement sub-network from a storage structure that stores replacement sub-networks;

replacing the selected candidate sub-network in the design with the replacement sub-network.

c) wherein at least each of a first set of replacement sub-networks have multiple circuit elements, wherein each of the multiple circuit elements of a first-set replacement sub-network is independently selectable by the method.

2. The method of claim 1, wherein identifying the replacement sub-network comprises:

generating a parameter based on a set of output functions performed by the selected candidate sub-network, wherein the parameter identifies the replacement sub-network.

3. The method of claim 2 further comprising: using the parameter to retrieve the replacement sub-network from the storage structure.

4. The method of claim 2, wherein the set of output functions includes only one output function.

5. The method of claim 2, wherein the set of output functions includes one or more output functions.

5 6. The method of claim 1 further comprising:

terminating the repetitions once a stopping criteria is reached.

7. The method of claim 6, wherein the design includes a plurality of circuit elements and the sub-networks are formed by circuit elements, the method further comprising:

after terminating the repetitions, traversing the design to identify circuit elements that are not bound to the technology library;

for each identified circuit element, attempting to identify a replacement sub-network that is stored in the storage structure;

if at least one replacement sub-network for an identified circuit element is identified, replacing the circuit element in the design with the identified replacement sub-network.

15 8. The method of claim 7, wherein if more than one replacement sub-networks are identified for a circuit element, selecting one of the replacement sub-networks and replacing the circuit element with the selected replacement sub-network.

9. The method of claim 8, wherein if more than one replacement sub-networks are identified for a circuit element, selecting the replacement sub-network that is better than or as good as the rest of the identified sub-networks.

10. The method of claim 7, wherein each circuit element performs a function, wherein if no replacement sub-network is identified for an identified circuit element, decomposing the function of the circuit element into a set of functions, and then attempting to identify a set of replacement sub-networks in the storage structure that perform the set of functions.

11. The method of claim 7, wherein traversing the design to identify circuit elements comprises identifying circuit elements that existed in the design when the design was received.

12. The method of claim 7 further comprising:

after traversing the design, repeatedly:

selecting from the design a candidate sub-network,

identifying at least one replacement sub-network from a storage structure that stores replacement sub-networks,

replacing the selected candidate sub-network in the design with the replacement sub-network.

13. The method of claim 1 further comprising:

before replacing the candidate sub-networks with the replacement sub-networks,  
evaluating whether to replace the selected candidate sub-network with the replacement sub-  
network,

wherein certain candidate sub-networks are replaced by replacement sub-networks

5 based on the evaluation,

wherein certain candidate sub-networks are not replaced based on the evaluations.

14. The method of claim 13, wherein the evaluating comprises computing a cost function.

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